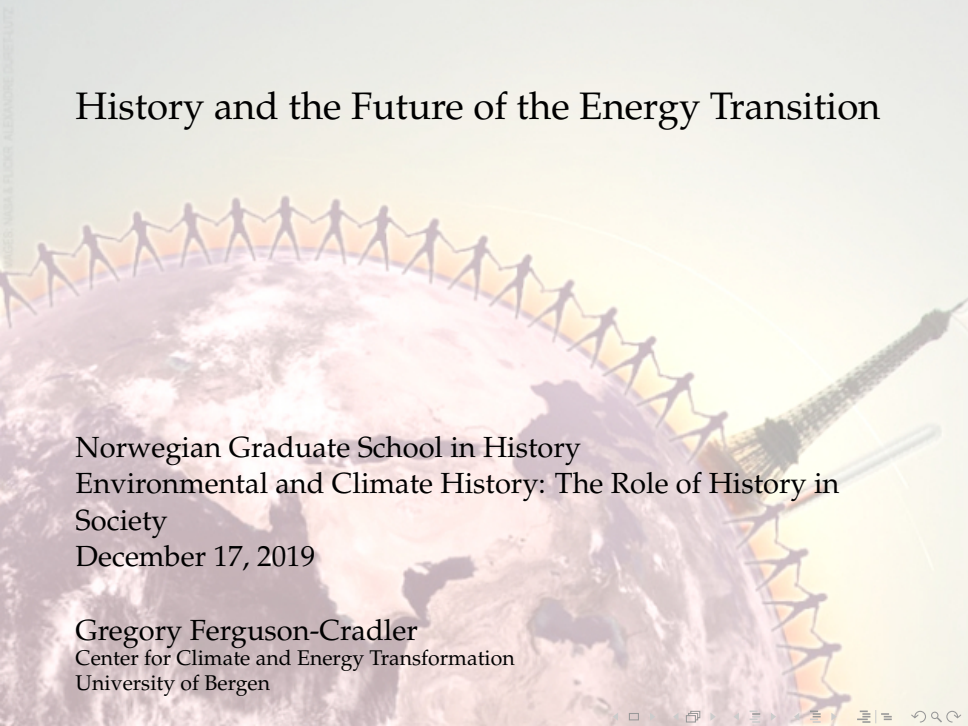


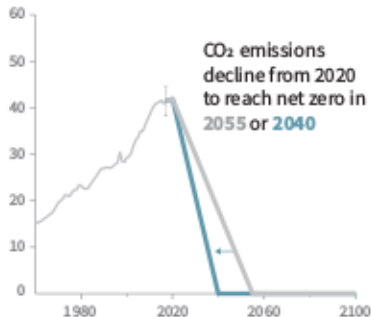
History and the Future of the Energy Transition



Norwegian Graduate School in History
Environmental and Climate History: The Role of History in
Society
December 17, 2019

Gregory Ferguson-Cradler
Center for Climate and Energy Transformation
University of Bergen

b) Stylized net global CO₂ emission pathways
Billion tonnes CO₂ per year (GtCO₂/yr)



c) Cumulative net CO₂ emissions
Billion tonnes CO₂ (GtCO₂)

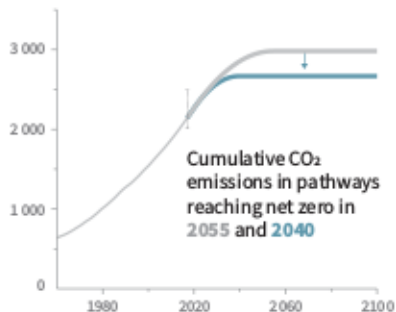


Figure 1: Intergovernmental Panel on Climate Change. (2018). *Global Warming of 1.5° C.*, 6.

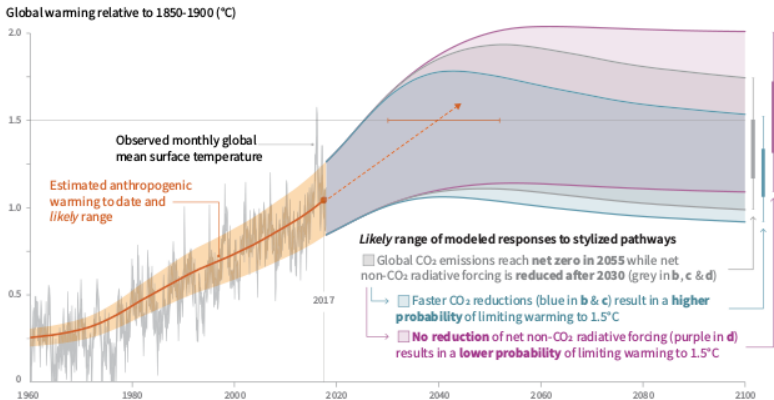
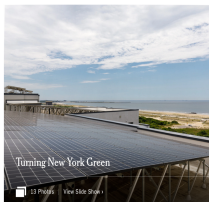


Figure 2: Intergovernmental Panel on Climate Change. (2018). *Global Warming of 1.5° C.*, 6.

Counting Down to a Green New York

New York plans to be carbon neutral by 2050, and housing is one of the biggest polluters. Can this dirt town clean up its act in time?



Turning New York Green

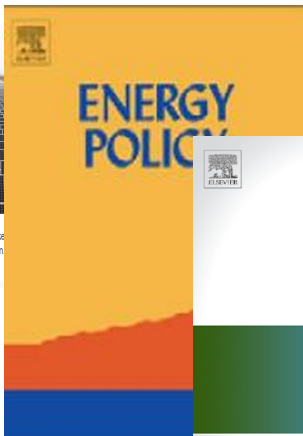
13 Photos View Slide Show

Software Update for The New York Times

Klimamålet ryker uten grønn revolusjon



Svarte utslipp gir grønt skifte i Kina. Skifergass danker FNs klimapanel etterlyser en global energirevolusjon, velger fossilsprett.



Editor in Chief: Benjamin K. Sovacool

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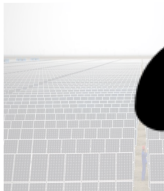


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Outline

Quick points from *The Shock of the Anthropocene*

The Energy Transitions Field

State of the Field

Engagement with history

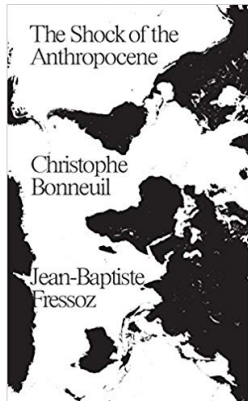
Short Digression on Narrative History

Narrative and Empirical History

Methods

History and the Future of the Energy Transition

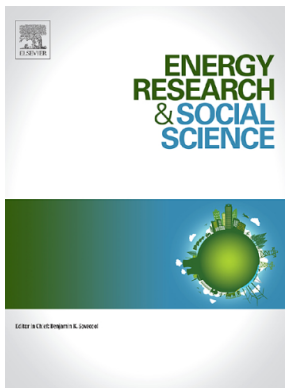
Shock of the Anthropocene



History can offer:

- ▶ Wider narratives.
- ▶ Recovery contingency in Anthropocene.
- ▶ Reflexivity in climate science.
- ▶ Governmentality/biopolitics for the 21st century.

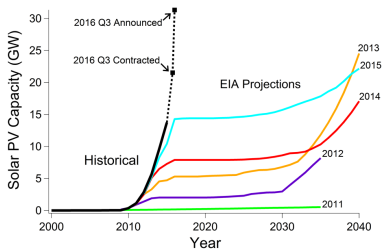
Energy Transitions



- ▶ Socio-technical systems (Hughes 1993)

Energy Transitions

Figure 1. U.S. Utility-Scale Solar PV Capacity and EIA Projections



U.S. EIA Projections Far from Accurate. Accessed at: cleanenergyaction.org (2016).

- ▶ Socio-technical systems (Hughes 1993)
- ▶ Niches, innovation, S-curve

Energy Transitions

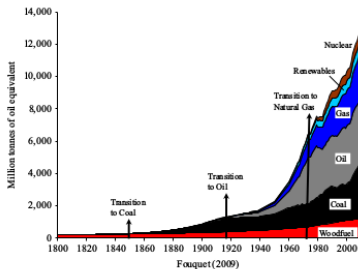
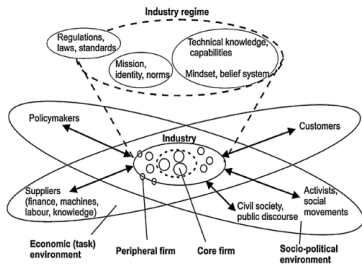


Fig. 1. Global energy consumption and transitions, 1800–2010. Source: Fouquet (2009).

Fouquet, Roger, and Peter JG Pearson. "Past and prospective energy transitions: Insights from history." (2012): 2.

- ▶ Socio-technical systems (Hughes 1993)
- ▶ Niches, innovation, S-curve
- ▶ Past transitions (relevant?)

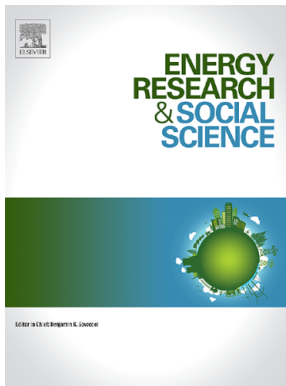
Energy Transitions



(Geels 2014)

- ▶ Socio-technical systems (Hughes 1993)
- ▶ Niches, innovation, S-curve
- ▶ Past transitions (relevant?)
- ▶ Three-level analysis

Energy Transitions



- ▶ Socio-technical systems (Hughes 1993)
- ▶ Niches, innovation, S-curve
- ▶ Past transitions (relevant?)
- ▶ Three-level analysis
- ▶ Three areas of focus: quantitative systems modeling, socio-technical analysis, and initiative-based learning (Turnheim et al. 2015; Köhler et al. 2019)

History and the Energy Transitions field



History and the Energy Transitions field



- ▶ In what ways do discourses of energy and climate erase indigenous or alternative forms of knowledge, or hide the particular history or assumptions underlying them?
- ▶ In what ways do energy technologies intersect with gender roles and other binaries (such as public/private, developed/developing, active/passive, self/other), and between various identities? How should the costs and benefits of energy production and use be distributed?
- ▶ At what point does a project become “too big” so that potential benefits from economies of scale or cooperation become over-whelmed by cost overruns and challenges?

History and the Energy Transitions field



- ▶ What impacts do the breakdown of families and communities, and the rise of the individual, have on patterns of energy consumption?
- ▶ Which energy systems have the fastest technological learning curves, and do these relate to the national systems of innovation in place at the time? What are the most effective strategies for catalyzing private sector investment in innovative low- or no-GHG emissions technologies?
- ▶ Which energy technologies and systems help reduce poverty and meet development goals and which ones exacerbate inequality and concentrate wealth?

History and the Energy Transitions field



- ▶ How do the energy security needs of developing countries differ from those of developed countries?
- ▶ Which methodologies are best at measuring externalities?
- ▶ How do concepts from outside of economics—such as that of “socio-ecological systems” enhance our understanding of externalities?
- ▶ If economic or social theory suggests that externalities should be included in energy prices, how can we convince consumers or political leaders to accept higher costs?
- ▶ What different social groups are involved in the production of (or may benefit from the use of) a particular energy system?

Sample Contents

Energy Research and Social Science (May 2020):

- ▶ Backyard voices: How sense of place shapes views of large-scale energy transmission infrastructure
- ▶ Solar electricity cultures: Household adoption dynamics and energy policy in Switzerland
- ▶ Eager to connect, cautious to consume: An integrated view of the drivers and motivations for electricity consumption among rural households in Kenya
- ▶ Democratic quality and nuclear power: Reviewing the global determinants for the introduction of nuclear energy in 166 countries
- ▶ Neglected intermediaries in bioenergy straw supply chains: Understanding the roles of merchants, contractors and agronomists in the England
- ▶ Young energy savers: Exploring the role of parents, peers, media and schools in saving energy among children in Belgium



- ▶ Representativeness
- ▶ Evaluation
- ▶ Measuring/aggregating (costs, benefits, etc)
- ▶ Systemic understandings
- ▶ Causation

Lawrence Stone, *The Revival of Narrative* (1979)

Lawrence Stone, *The Revival of Narrative* (1979)

- ▶ Reaction to “scientific history” of social history, Annales, ‘cliometrics’.

Lawrence Stone, *The Revival of Narrative* (1979)

- ▶ Reaction to “scientific history” of social history, Annales, ‘cliometrics’.

Lawrence Stone, *The Revival of Narrative*

“Most historians now believe that the culture of the group, and even the individual, are potentially at least as important causal agents of change as the impersonal forces of material output and demographic growth. There is no theoretical reason why the latter should always dictate the former rather than vice-versa and indeed evidence is piling up of the contrary.” (Stone 1979, 9)

Lawrence Stone, *The Revival of Narrative* (1979)

- ▶ Reaction to “scientific history” of social history, Annales, ‘cliometrics’.

Lawrence Stone, *The Revival of Narrative*

“If I am right in my diagnosis, the movement to narrative by the ‘new historians’ marks the end of an attempt to produce a coherent scientific explanation of change in past.” (Stone 1979, 19)

Return from the Return to Narrative?

Return from the Return to Narrative?

- ▶ Theoretically-informed, balancing of agency and structure (Sewell 2005)

Return from the Return to Narrative?

William Sewell, *Logics of History*

Social scientists' most theoretically valuable habit of mind, in my opinion, is their strong penchant for structural thinking, a penchant that interpretivists generally share to a greater or lesser degree with positivists... social scientists tend to look for explanations in terms of relatively limited set of enduring, entrenched, and causally powerful features of the social world. Where historians tend to be satisfied with multi-stranded but ultimately causally diffuse accounts, social scientists tend to single out what they take to be the most causally important features of the world and elaborate their dynamics systematically. This insistence on explaining phenomena by means of well-defined structural features tends to push researchers to greater theoretical and methodological clarity. In my opinion, structural thinking is a social-scientific virtue that historians could profitably emulate. (Sewell 2005, 14)

Return from the Return to Narrative?

- ▶ Theoretically-informed, balancing of agency and structure (Sewell 2005)
- ▶ Empirical methods such as hypothesis testing (Jong, Higgins, and Driel 2015)

Return from the Return to Narrative?

de Jong et al., "Towards a New Business History"

If business history is to develop, the traditional case study approach needs to be complemented by the application of empirical methods that scrutinise ideas and theories by subjecting them to rigorous hypotheses testing... through engagement with the circle of knowledge creation we anticipate that these empirical methods will further develop the discipline of business history.

Return from the Return to Narrative?

- ▶ Theoretically-informed, balancing of agency and structure (Sewell 2005)
- ▶ Empirical methods such as hypothesis testing (Jong, Higgins, and Driel 2015)
- ▶ Causation and counterfactuals (Hilt 2017)

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Return from the Return to Narrative?

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- ▶ Empirical methods such as hypothesis testing (Jong, Higgins, and Driel 2015)
- ▶ Causation and counterfactuals (Hilt 2017)
- ▶ Quantification (Sewell 2010)
- ▶ Partial return to “scientific history”? (De Vries 2013)

Return from the Return to Narrative?

Jan de Vries, "The Return from the Return to Narrative"

I can now detect an undercurrent sucking historians back, away from narrative history and away from micro- and subjectivist histories and back to a concern with coherent, causal explanation of social change. (De Vries 2013, 17)

Stone, Revival of Narrative

“[The use of quantification] has greatly improved the general quality of historical discourse, by demanding the citation of precise numbers instead of the previous loose use of words. Historians can no longer get away with saying “more,” “less,” “growing,” “declining,” all of which logically imply numerical comparisons, without ever stating explicitly the statistical basis for their assumptions. It has also made argument exclusively by example seem somewhat disreputable. Critics now demand supporting statistical evidence to show that the examples are typical, and not exceptions to the rule. These procedures have undoubtedly improved the logical power and persuasiveness of historical argument. Nor is there any disagreement that whenever it is appropriate, fruitful and possible from the surviving records, the historian should count.” (Stone 1979, 10–11)

Methods



Methods



- ▶ Case-studies, hypothesis testing, correlations and descriptive statistics, regression – causation

Methods



- ▶ Case-studies, hypothesis testing, correlations and descriptive statistics, regression – causation
- ▶ Theory-building, exploratory analyses

Methods



- ▶ Case-studies, hypothesis testing, correlations and descriptive statistics, regression – causation
- ▶ Theory-building, exploratory analyses
- ▶ Employ numbers, graphs, statistics

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Methods



- ▶ Case-studies, hypothesis testing, correlations and descriptive statistics, regression – causation
- ▶ Theory-building, exploratory analyses
- ▶ Employ numbers, graphs, statistics
- ▶ Texts can also be (simply) quantified
- ▶ Annales (with 21st-century methods)

Conclusions

- ▶ Recover causality and generalizability, and other parts lost with “scientific history.” This might require some expansion of analytical toolkits.

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- ▶ These are that not all historians should use.

Conclusions

- ▶ Recover causality and generalizability, and other parts lost with “scientific history.” This might require some expansion of analytical toolkits.
- ▶ Meet other disciplines halfway
- ▶ These are that not all historians should use. But some might.

Thank you!

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De Vries, Jan. 2013. The return from the return to narrative.



Geels, Frank W. 2014. Reconceptualising the co-evolution of firms-in-industries and their environments: developing an inter-disciplinary triple embeddedness framework. *Research Policy* 43 (2): 261–277.










Hilt, Eric. 2017. Economic history, historical analysis, and the “new history of capitalism”. *The Journal of Economic History* 77 (2): 511–536.



Hobsbawm, E. J. 1971. From social history to the history of society. *Daedalus* 100 (1): 20–45.



-  Hughes, Thomas Parke. 1993. *Networks of power: electrification in western society, 1880 - 1930* [in eng]. Softshell Books ed. Softshell books History of technology. Baltimore, Md.: John Hopkins Univ. Press.
-  Jong, Abe de, David Michael Higgins, and Hugo van Driel. 2015. Towards a new business history? *Business History* 57 (1): 5–29.
-  Köhler, Jonathan, Frank W. Geels, Florian Kern, Jochen Markard, Elsie Onsongo, Anna Wieczorek, Floortje Alkemade, et al. 2019. An agenda for sustainability transitions research: state of the art and future directions. *Environmental Innovation and Societal Transitions* 31:1–32.
-  Sewell, William H. 2005. *Logics of history: social theory and social transformation*. University of Chicago Press.

-  Sewell, William H. 2010. A strange career: the historical study of economic life. *History and Theory* 49 (4): 146–166.
-  Stone, Lawrence. 1979. The revival of narrative: reflections on a new old history. *Past & Present*, no. 85: 3–24.
-  Turnheim, Bruno, Frans Berkhout, Frank Geels, Andries Hof, Andy McMeekin, Björn Nykvist, and Detlef van Vuuren. 2015. Evaluating sustainability transitions pathways: bridging analytical approaches to address governance challenges. *Global Environmental Change* 35:239–253.

The “New” Social History

Eric Hobsbawm, “From Social History to the History of Society”

“[For a “common working model”] one starts with the material and historical environment, goes on to the forces and techniques of production (demography coming somewhere in between), the structure of the consequent economy- divisions of labor, exchange, accumulation, distribution of the surplus and so forth- and the social relations arising from these. These might be followed by the institutions and the image of society and its functioning which underlie them. . . . The practice is thus to work outwards and upwards from the process of social production in its specific setting.” (Hobsbawm 1971, 31)